

Experiment No. 9 – Genesis of Tetanus

1. Define Treppe, Clonus and Complete Tetanus.

Ans: Treppe: It is successive stimulation of a frog muscle due to repeated stimuli if frequency of stimulus is 5 Hz or low.

Clonus: It is successive contraction of a frog muscle due to repeated stimulus if frequency of stimulus is between 5 Hz and 20 Hz.

Complete Tetanus: It is state of sustained contraction after rapid stimulus when frequency of stimulus is more than 25 Hz. Repeated stimuli falls in contraction phase.

2. What do you understand by critical frequency of tetanization? What factors influence it?

Ans: Critical frequency of tetanization is minimum frequency of stimulus at which complete tetanus of muscle occurs.

Factors affecting it are:-

- a. Contraction Phase
- b. Surrounding Phase
- c. Load on Muscle

3. What is the effect of multiple motor unit summation?

Ans: Motor unit summation or spatial summation is requirement of additional motor unit within the muscle to develop more force.

A maximum contraction is generated when all motor unit are activated within a muscle.

4. Name the type of muscle contraction which occur in vitro.

Ans: Muscle contraction which occur in vitro is isotonic muscle contraction. Both the ends are free.

5. Why cardiac muscle can not be tetanized?

Ans: Cardiac muscle can't be tetanized due to longer refractory period [slow opening of Ca^{+2}].

6. How does tetanus differs from tetany?

Ans:

A. Tetany

Due to decrease in ionized Ca^{+2}



Increase in membrane permeability to Na^{+}



Neuromuscular junction hyper excitability



Exclusive spasm of skeletal muscle



Cramps in extremities

B. Tetanus

- Tetanus is caused by clostridium tetani.
- Release of exhibitory neurotransmitter glycine – GABA in blocked.
- Uninhibited spasm of contraction of muscle.

→ Lock jaw